This listing of claims will replace all prior versions and listings of claims in the application:

1-17.   Cancelled.

18.   (Currently Amended) A carrier phase GPS positioning device, comprising:

a first integer ambiguity estimation unit that combines a plurality of first carrier phase accumulation data in a first duration extracted from data received from a satellite by a reference station at a fixed position, with one or more second carrier phase accumulation data received from the satellite by a mobile station in a second duration shorter than the first duration, and estimates an integer ambiguity included in the second carrier phase accumulation data; and

a positioning unit that determines the position of the mobile station using the integer ambiguity estimated by the first integer ambiguity estimation unit;

a movement quantity detection unit that detects a movement of the mobile station and a movement quantity of the mobile station when the mobile station is moving;

wherein the mobile station is a vehicle having wheels;

wherein the movement quantity detection unit detects a movement of the vehicle based on a wheel speed sensor that detects a rotational speed of the wheels; and

wherein when a slip ratio greater than a predetermined value is detected by at least the wheel speed sensor, the integer ambiguity estimation processing by a second integer ambiguity estimation unit is initialized, and the positioning unit determines the position of the mobile station using an integer ambiguity estimated by the first integer

ambiguity estimation unit until the second integer ambiguity estimation unit estimates or re-estimates the integer ambiguity.

19.   (Previously Presented) The carrier phase GPS positioning device as claimed in claim 18, wherein abnormal values are excluded from the first carrier phase accumulation data.

20.   (Previously Presented) The carrier phase GPS positioning device as claimed in claim 18, wherein when reception of an electromagnetic wave emitted from the satellite is temporarily interrupted, data prior to the interruption is excluded from the first carrier phase accumulation data.

21.   (Previously Presented) The carrier phase GPS positioning device as claimed in claim 18, wherein

the plurality of first carrier phase accumulation data in the first duration includes a plurality of carrier phase accumulation data transmitted from the satellite at a first number of times in the first duration; and

the second carrier phase accumulation data in the second duration include a plurality of carrier phase accumulation data transmitted from the satellite at a second number of times in the second duration, said second number being less than the first number.

22.   (Previously Presented) The carrier phase GPS positioning device as claimed in claim 21, wherein the second number equals one.

23.   (Previously Presented) The carrier phase GPS positioning device as claimed in claim 20, wherein after the first integer ambiguity estimation unit estimates the integer ambiguity, the positioning unit determines the position of the mobile station using data measured on the mobile station side alone.

24.   (Currently Amended) The carrier phase GPS positioning device as claimed in claim 21, ~~further comprising:~~ wherein

~~a movement quantity detection unit that detects a movement of the mobile station and a movement quantity of the mobile station when the mobile station is moving;~~

a ~~the~~ second integer ambiguity estimation unit ~~that~~ estimates, when the mobile station is at rest, ~~estimates~~ the integer ambiguity included in the second carrier phase accumulation data, said estimation being made based on the first carrier phase accumulation data and the second carrier phase accumulation data in the period when the mobile station is at rest; and

a third integer ambiguity estimation unit ~~that~~ estimates, while the mobile station is moving, ~~estimates~~ the integer ambiguity included in the second carrier phase accumulation data while taking movement quantity detection results into consideration.

25.   (Previously Presented) The carrier phase GPS positioning device as claimed in claim 24, wherein

after the second integer ambiguity estimation unit or the third integer ambiguity estimation unit estimates the integer ambiguity, the positioning unit determines the position of the mobile station using the integer ambiguity estimated by the second integer ambiguity estimation unit or the third integer ambiguity estimation unit instead of the integer ambiguity estimated by the first integer ambiguity estimation unit.

26.   (Currently Amended) ~~The~~ A carrier phase GPS positioning device ~~as claimed in claim 24,~~ comprising:

a first integer ambiguity estimation unit that combines a plurality of first carrier phase accumulation data in a first duration extracted from data received from a satellite by a reference station at a fixed position, with one or more second carrier phase accumulation data received from the satellite by a mobile station in a second duration shorter than the first duration, and estimates an integer ambiguity included in the second carrier phase accumulation data; and

a positioning unit that determines the position of the mobile station using the integer ambiguity estimated by the first integer ambiguity estimation unit;

a movement quantity detection unit that detects a movement of the mobile station and a movement quantity of the mobile station when the mobile station is moving;

a second integer ambiguity estimation unit that, when the mobile station is at rest, estimates the integer ambiguity included in the second carrier phase accumulation data, said estimation being made based on the first carrier phase accumulation data and the second carrier phase accumulation data in the period when the mobile station is at rest; and

-5-

a third integer ambiguity estimation unit that, while the mobile station is moving, estimates the integer ambiguity included in the second carrier phase accumulation data while taking movement quantity detection results into consideration;

wherein the plurality of first carrier phase accumulation data in the first duration includes a plurality of carrier phase accumulation data transmitted from the satellite at a first number of times in the first duration; and

the second carrier phase accumulation data in the second duration include a plurality of carrier phase accumulation data transmitted from the satellite at a second number of times in the second duration, said second number being less than the first number;

~~wherein~~ the mobile station is a vehicle having wheels;

the movement quantity detection unit detects a movement of the vehicle based on a wheel speed sensor that detects a rotational speed of the wheels; and

when a slip ratio greater than a predetermined value is detected by at least the wheel speed sensor, the integer ambiguity estimation processing by the third integer ambiguity estimation unit is initialized, and the positioning unit determines the position of the mobile station using the integer ambiguity estimated by the first integer ambiguity estimation unit until the third integer ambiguity estimation unit estimates or re-estimates the integer ambiguity.

27.   (Previously Presented) The carrier phase GPS positioning device as claimed in claim 18, wherein

when a plurality of reference stations is present in a communication region, the reference station is selected which is able to communicate with more satellites in common with the satellite communicating with the mobile station, and

the first carrier phase accumulation data related to the selected reference station is used.

28.   (Previously Presented) The carrier phase GPS positioning device as claimed in claim 27, wherein when there are plural of the reference stations able to communicate with the same number of the satellites, the reference station is selected which has the highest minimum reception strength of signals from the satellites.

29.   (Previously Presented) The carrier phase GPS positioning device as claimed in claim 18, wherein

when a plurality of reference stations, which receive signals from a plurality of common satellites and the signal reception strength with each of the common satellites exceeds a predetermined value, are present in a communication region, the reference station is selected which is closest to the mobile station, and

the first carrier phase accumulation data related to the selected reference station is used.

30.   (Currently Amended) A carrier phase GPS positioning method, comprising the steps of:

combining a plurality of first carrier phase accumulation data in a first duration

extracted from data received from a satellite by a reference station at a fixed position,

with one or more second carrier phase accumulation data received from the satellite by

a mobile station in a second duration shorter than the first duration, and estimating an

integer ambiguity included in the second carrier phase accumulation data; and

determining the position of the mobile station using the estimated integer

ambiguity;

wherein the mobile station is a vehicle having wheels;

a movement quantity detection unit detects a movement of the vehicle based on

a wheel speed sensor that detects a rotational speed of the wheels; and

when a slip ratio greater than a predetermined value is detected by at least the

wheel speed sensor, an integer ambiguity is processed, and a position of the mobile

station is determined using the estimated integer ambiguity.

31.   (Currently Amended) A carrier phase GPS positioning method, comprising

the steps of:

acquiring a carrier phase accumulation value at one time on the mobile station

side;

acquiring a plurality of carrier phase accumulation values at a plurality of times

prior to the one time on the reference station side;

combining the carrier phase accumulation values on the reference station side at

the plural times, with a carrier phase accumulation value on the mobile station side at

the one time, and estimating an integer ambiguity included in the carrier phase

accumulation value of signals transmitted from the satellite received by the mobile

station, the plurality of first carrier phase accumulation data in the first duration including

a plurality of carrier phase accumulation data transmitted from the satellite at a first

number of times in the first distance, the second phase accumulation data in the second

duration including a plurality of carrier phase accumulation data transmitted from the

satellite at a second number of time in the second duration, said second number being

less than the first number;

estimating the integer ambiguity included in the second carrier phase

accumulation data and the second carrier phase accumulation date in a second integer

ambiguity estimation unit when the mobile station is at rest, and

estimating the integer ambiguity included in the second phase accumulation data

in a third ambiguity estimation unit while the mobile station is moving, while taking

movement quantity detection results into consideration;

wherein the mobile station is a vehicle having wheels, and the movement

quantity detection unit detects a movement of the vehicle based on a wheel speed

sensor detection a rotational speed of the wheels.

32.   (Currently Amended) A carrier phase GPS positioning system,

comprising:

a reference station that extracts a plurality of first carrier phase accumulation

data in a first duration based on received data from a satellite;

a carrier phase GPS positioning device including a first integer ambiguity

estimation unit that combines the first carrier phase accumulation data with one or more

second carrier phase accumulation data received from the satellite by a mobile station in a second duration shorter than the first duration, and estimates an integer ambiguity included in the second carrier phase accumulation data; and a positioning unit that determines the position of the mobile station using the estimated integer ambiguity; ~~and~~

a second integer ambiguity estimation unit that, when the mobile station is at rest, estimates the integer ambiguity included in the second carrier phase accumulation data, said estimation being made based on the first carrier phase accumulation data and the second carrier phase accumulation data in the period when the mobile station is at rest; and

a third integer ambiguity estimation unit that, while the mobile station is moving, estimates the integer ambiguity included in the second carrier phase accumulation data while taking movement quantity detection results into consideration; and

a communication path that enables communication between the carrier phase GPS positioning device and the reference station;

wherein the plurality of first carrier phase accumulation data in the first duration includes a plurality of carrier phase accumulation data transmitted from the satellite at a first number of times in the first duration;

the second carrier phase accumulation data in the second duration includes a plurality of carrier phase accumulation data transmitted from the satellite at a second number of times in the second duration, said second number being less than the first number; and

a movement quantity detection unit detects a movement of the mobile station and a movement quantity of the mobile station when the mobile station is moving.

33.   (Currently Amended) A reference station that extracts a plurality of first carrier phase accumulation data in a predetermined duration based on received data from a satellite, and transmits the first carrier phase accumulation data to a carrier phase GPS positioning device including an estimation unit that combines the first carrier phase accumulation data with one or more second carrier phase accumulation data received from the satellite by a mobile station in a second duration shorter than the predetermined duration, and estimates an integer ambiguity included in the second carrier phase accumulation data; and a positioning unit that determines the position of the mobile station using the estimated integer ambiguity and a movement quantity detection unit that detects a movement of the mobile station and a movement quantity of the mobile station when the mobile station is moving;

wherein the plurality of first carrier phase accumulation data in the first duration includes a plurality of carrier phase accumulation data transmitted from the satellite at a first number of times in the first distance, the second phase accumulation data in the second duration includes a plurality of carrier phase accumulation data transmitted from the satellite at a second number of times in the second duration, said second number being less than the first number;

the integer ambiguity included in the second carrier phase accumulation data and the second carrier phase accumulation date in a second integer ambiguity is estimated in an estimation unit when the mobile station is at rest,

the integer ambiguity included in the second phase accumulation data is estimated in an ambiguity estimation unit while the mobile station is moving, while taking movement quantity detection results into consideration; and

the movement quantity detection unit detects a movement of the mobile station based on a speed sensor detection.

34.   (Currently Amended) A reference station, comprising:

an acquisition unit that acquires a carrier phase accumulation value at one time on a mobile station side;

an integer ambiguity estimation unit that combines a plurality of the carrier phase accumulation values at a plurality of times prior to the one time on the reference station side with the carrier phase accumulation value on the mobile station side, and estimates an integer ambiguity included in the carrier phase accumulation value on the mobile station side; and

a positioning unit that determines the position of the mobile station using the integer ambiguity estimated by the integer ambiguity estimation unit; and

a movement quantity detection unit that detects a movement of the mobile station and a movement quantity of the mobile station when the mobile station is moving; and

a transmission unit that transmits the position detected by the positioning unit to the mobile station;

wherein the plurality of first carrier phase accumulation data in the first duration includes a plurality of carrier phase accumulation data transmitted from the satellite at a first number of times in the first duration;

the second carrier phase accumulation data in the second duration includes a plurality of carrier phase accumulation data transmitted from the satellite at a second number of times in the second duration, said second number being less than the first number;

the mobile station is a vehicle having wheels;

the movement quantity detection unit detects a movement of the vehicle based on a wheel speed sensor that detects a rotational speed of the wheels; and

when a slip ratio greater than a predetermined value is detected by at least the wheel speed sensor, the integer ambiguity estimation processing by the integer ambiguity estimation unit is initialized, and the positioning unit determines the position of the mobile station using the integer ambiguity estimated by the integer ambiguity estimation unit until the integer ambiguity estimation unit estimates or re-estimates the integer ambiguity.